

Laparoscopic Assisted Vaginal Hysterectomy / Laparoscopic Hysterectomy

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Laparoscopic assisted vaginal hysterectomy has changed the face of gynecologic surgery. Unfortunately it became a "standard" procedure before it could adequately be studied. Therefore most studies are either descriptive or a retrospective comparison to abdominal or vaginal hysterectomy. Laparoscopic assisted vaginal hysterectomy is not a substitute for vaginal hysterectomy. It should be used to convert an abdominal procedure, to one which can be performed vaginally. Laparoscopic assisted vaginal hysterectomy may have a place in gynecologic surgery if selected wisely.

History of Hysterectomy

Today, approximately 600,000 hysterectomies are performed each year in the United States. It is the second most common operation performed, second only to cesarean section. The percentage of women who have had a hysterectomy is approximately 20% by age 40 and 37% by age 65. But the number and rate of hysterectomies have actually declined since the 1970's.¹

It is not known when exactly the first hysterectomy was performed but a reference to hysterectomy was made in the 5th century BC, in the time of Hippocrates. Vaginal hysterectomy was performed many centuries before abdominal hysterectomy was even attempted. Not until the early 19th century were abdominal hysterectomies first performed. Hemorrhage leading to a high mortality rate was a problem in the early years, but better surgical technique, including ligation of the major blood supply to the uterus, made this a more realistic procedure. According to Thomas Cullen, 969 abdominal hysterectomies were done at The Johns Hopkins Hospital between 1889 and 1906 with a mortality rate of 5.9%. The mortality rate for hysterectomy today is .1- .2%.¹

For many years abdominal hysterectomy and vaginal hysterectomy were the only options a woman had. In 1984 the use of a laparoscope in assisting a vaginal hysterectomy was first described. But not until Reich published the article Laparoscopic Hysterectomy,³ in 1989 did this procedure take off. This was also the first time the term Laparoscopic Assisted Vaginal Hysterectomy was used. Since then, thousands of these procedures have been performed. The latest procedures include the Laparoscopic Hysterectomy, Total Laparoscopic Hysterectomy and Laparoscopic Radical Hysterectomy with Pelvic Lymphadenectomy.

Definitions of Laparoscopically Assisted Vaginal Hysterectomy

There has been a lot of confusion on how to define the different procedures. One must remember that the goal of using the laparoscope is to convert what would have been an abdominal hysterectomy to a vaginal hysterectomy. Therefore, in some patients only a diagnostic laparoscopy needs to be performed and if reasonable, the remainder of the procedure done vaginally. In other cases the hysterectomy must be done completely via the laparoscope.

The classification presented is the one used in the Textbook of Laparoscopy edited by Hulka and Reich.²

Laparoscopic Hysterectomy Classification

1. Diagnostic laparoscopy with vaginal hysterectomy
2. Laparoscopic-assisted vaginal hysterectomy (LAVH)
3. Laparoscopic hysterectomy (LH)
4. Total laparoscopic hysterectomy (TLH)
5. Laparoscopic supracervical hysterectomy (LSH)
Including classical interstitial Semm hysterectomy (CISH)
6. Vaginal hysterectomy with laparoscopic vault suspension (LVS)
or Laparoscopic pelvic reconstruction (LPR)
7. Laparoscopic hysterectomy with lymphadenectomy
8. Laparoscopic hysterectomy with lymphadenectomy and omentectomy
9. Laparoscopic radical hysterectomy with lymphadenectomy

The difference among the first four procedures is discussed, since they are the most common.

Number one, the diagnostic laparoscopy with vaginal hysterectomy. In this procedure, the surgeon performs a diagnostic laparoscopy to see if there is any reason to perform an LAVH or TAH, i.e.: extensive endometriosis, pelvic adhesions. If no reason is present, then a vaginal hysterectomy is performed without any laparoscopic assistance.

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Number two, the laparoscopic-assisted vaginal hysterectomy. Of the procedures listed above, this is the one most frequently performed. This term is used when the laparoscopic surgery includes: adhesiolysis; excision of endometriosis; oophorectomy; ligation of the round ligaments, infundibulopelvic ligaments or uteroovarian ligaments.

Number three, the laparoscopic hysterectomy. This term is used when laparoscopic ligation of the uterine arteries is added to the LAVH criteria.

Number four, total laparoscopic hysterectomy. This term is used when ligation of all attachments of the uterus is done laparoscopically including the uteroovarian or infundibulopelvic ligaments, the round ligaments, the uterine arteries and the cardinal uterosacral complex; until the uterus is free of all its attachments. The vagina is then closed with laparoscopically placed sutures.

Indications and Contraindications for Laparoscopically Assisted Vaginal Hysterectomy

Again one must remember that a laparoscopic assisted vaginal hysterectomy should convert a surgery which would have had to have been performed abdominally to one which can be performed vaginally. The goal is not to perform a surgery which can be done vaginally and perform it laparoscopically. Also, the field is changing so rapidly that what used to be an absolute contraindication, such as a malignancy, is now only a relative contraindication to some; and to others an indication.

Indications for Laparoscopically Assisted Vaginal Hysterectomy²

1. Prior pelvic surgery requiring lysis of adhesions
2. Endometriosis requiring treatment or lysis of adhesions or both
3. Pelvic inflammatory disease requiring lysis of adhesions
4. Ligation of infundibulopelvic ligaments for ovarian removal allowing completion by vaginal hysterectomy
5. Presence of pelvic mass
6. Limited uterine mobility
7. Narrow pubic arch
8. Constricted vagina with no prolapse
9. Severe arthritis which prohibits placement of the patient in sufficient lithotomy position for vaginal exposure

Contraindications for Laparoscopically Assisted Vaginal Hysterectomy²

1. Inexperience or inadequate training
2. Pelvic mass that cannot be removed intact through a culdotomy incision or is too large to fit into an impermeable sac
3. Stage III ovarian cancer that requires a large abdominal incision for adequate staging
4. Peripartum indications such as for placenta accreta, uterine atony, unspecified uterine bleeding & uterine rupture
5. Any contraindication to laparoscopy such as severe cardiac disease
6. Any contraindication to surgery itself

Laparoscopic Assisted Vaginal Hysterectomy Versus Abdominal Hysterectomy

Unfortunately, there are no good studies to answer the question, which is better, laparoscopically assisted vaginal hysterectomy or total abdominal hysterectomy. The vast majority of literature is either case series or retrospective comparisons.^{9-21, 24} There are only a few prospective studies but even these are not very helpful. For example, in a study by Raju et al.⁴⁻⁵ a randomized prospective study was done to compare LAVH-BSO versus TAH-BSO in 80 patients. The study showed a significant increase in operative time, (100 vs. 57 minutes in the LAVH-BSO group vs. the TAH-BSO group); quicker recovery & return to work earlier in the LAVH-BSO group; and a shorter hospital stay; (3.5 days in the LAVH-BSO group vs. 6 days in the TAH-BSO group), which led to an overall decrease in cost. One problem with this study is that the majority of patients in our community stay only three days after a total abdominal hysterectomy and two to three days after a laparoscopic assisted vaginal hysterectomy.

In 1995, Munro et al.⁶ did a review of the literature, which compared complication rates of laparoscopic hysterectomy versus abdominal hysterectomy versus vaginal hysterectomy. In total abdominal hysterectomy vs. laparoscopic hysterectomy, minor complications were fewer in the LAVH group, 5.4% vs. 7.8% respectively but major complications were greater in the LAVH group 2.5% vs. .9% respectively. Unfortunately, analysis to check for statistical significance could not be done due to the heterogeneity of the studies. Major complications were not always well defined in the studies reviewed but usually included damage to a viscus, conversion to laparotomy due to complications, life threatening cardiopulmonary or thromboembolic events. One encouraging piece of data in this review is that of all 2975 cases reported in the literature, no deaths occurred.

In 1997, a review of the literature was done by Meikle⁷ comparing complications and recovery among LAVH, TAH and VH. 3112 LAVH's, 1618 TAH's and 690 VH's were reviewed. LAVH cases compared with TAH cases demonstrated significantly increased incidence of bladder injury, 1.8% versus .4% respectively; significantly longer operating room time, 115 minutes versus 87 minutes respectively; and significantly shorter hospitalization, 49 hours versus 79 hours respectively. Use of analgesia was consistently less for LAVH than for TAH and return to full activity was always sooner for LAVH when compared to TAH. Cost for the LAVH was higher in seven out of eleven studies, but the remaining four studies showed a lower cost for LAVH when both disposable instruments and length of hospital stay were considered.

Dorsey et al.⁸ published a review of 1049 patients who underwent hysterectomy. 26% were LAVH's, 54% TAH's & 20% VH's. The mean total charges (facility plus professional fee) were \$6,116.00, \$5,084.00 and \$4,221.00 respectively, this was statistically significant. The hospital stays were 2.6, 3.9 and 2.9 days respectively, (these numbers are closer to the hospital stays in our community). The conclusion was that despite shorter hospital stays, in-hospital charges and costs for LAVH are higher than for either alternative procedure, most likely due to use of disposable instruments and

longer operating room times. One must note that the cost savings of time to return to work were not included in the financial analysis.

In general in a review of the studies in comparing laparoscopic hysterectomy versus total abdominal hysterectomy, the following are usually shown:^{8-13, 15, 17-19, 21-23}

1. LAVH has a longer operating time than TAH
2. LAVH has a decreased hospital stay than TAH
3. LAVH has a decreased use of narcotic analgesics postoperatively than TAH
4. LAVH has decreased postoperative pain postoperatively versus TAH
5. LAVH has a decreased time to resumption of normal activity versus TAH

The cost of LAVH vs. TAH depends on the types of instruments used and endpoints studied. If one uses a large amount of disposable instruments, has longer operating times and the cost analysis only includes the operation itself, LAVH is more expensive. If one uses mostly nondisposable instruments and the cost analysis includes both hospital stay and money saved by faster time to return to work, there can be a savings with LAVH.

The only thing one can say for sure is that the incisions in laparoscopic assisted vaginal hysterectomy are smaller than total abdominal hysterectomy, making it a cosmetically more appealing procedure.

Summary


In conclusion, laparoscopically assisted vaginal hysterectomy is a procedure which is widely used. Most authorities agree on one thing, LAVH is not a substitute for vaginal hysterectomy. The role of LAVH should be to convert abdominal hysterectomies to vaginal hysterectomies. The problem at this time is that the procedure is so consumer driven that it is almost impossible to perform good randomized prospective studies comparing the two. In the review by Meikle, the author noted that to perform a randomized trial of LAVH versus TAH large enough to detect a 50% increase in injuries based on a 4% incidence of combined major complications, one would require 1461 patients in each arm to perform a one-tailed test at an alpha of .05 and with 80% power. Even with the lack of good data, this author feels that if both the surgeon and patient carefully think out the mode of surgery, there is a role for this procedure in gynecology.

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